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PLANT AND
ENVIRONMENTAL
SCIENCES**

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Christian Williams, J2 Engineers,

I have received your inquiry concerning light pollution from the Loudoun Co. Scott Jenkins Memorial Park Phase 3 plan and the potential for this lighting design to affect poinsettia flowering on plants grown in a greenhouse on an adjacent property.

My research has included projects where we have studied photoperiod responses of poinsettia including the light intensity threshold for light perception.

Note that poinsettias begin the flowering process in mid-September and finish in mid- to late-November. During this time, the plants must experience continuous darkness at night for normal flowering. Light above a threshold intensity will interrupt the continuous period of darkness, causing the plants to revert to vegetative growth. Depending on the duration and intensity of the light pollution, flowering can be delayed, or completely interrupted, resulting in significant economic losses for a greenhouse grower.

Our experimental data show that a light intensity of 2.0 footcandles during the night will completely interrupt poinsettia flowering, while a light intensity between 0.2 and 2.0 footcandles will delay flowering. Poinsettias do not perceive light intensities <0.2 footcandles, so these will not affect flowering.

Therefore, based on the illumination summary performed by Musco Lighting, any location reading <0.2 footcandles would not be expected to be impacted by light pollution. Also, note that greenhouse structures have <100% light transmission. So, the light intensities delivered to benches inside a greenhouse are expected to be 30% to 50% lower than the numbers presented in the illumination summary.

If you have any question, please contact me at 864-633-7227.

Sincerely,



James E. Faust
Professor of Floriculture Physiology